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STATUS OF MOUNTAIN PINE BEETLE INFESTATION IN THE
KANIKSU NATIONAL FOREST
1946 and 1947

by
Archie L. Gibson
Entomologist

Forest Insect Laboratory
Coeur d'Alene, Idaho
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A survey of the Kaniksu National Forest was conducted early in the summer of 1946 but due to the pressure of other work no detailed report was made of the findings for that year. In this report the data for the two years have been included.

The survey made in 1946 was conducted in July and August prior to the completion of mountain pine beetle attacks for the season. It was planned to follow this preliminary survey with a second examination late in the season, reexamining such areas as gave indications of an epidemic from the early survey. The second examination in 1946 could not be made, however, due to insufficient man-power.

In 1947, the areas which had shown infestation in 1946 sufficient to warrant concern, were again examined. Data for the two years for these units are compared in the following pages.

Boswell Unit - Mosquito Creek Area

600 acres

Survey of the Mosquito Creek drainage in 1946 revealed numerous red-top western white pine but none of those examined had been attacked by the mountain pine beetle. No trees attacked during 1946 were observed, either, but the possibility of their not having been encountered on the survey strip, prompted a second examination in 1947. The data for the two years is given in the following summarization.

Data for 1946

<u>Survey sample in</u>		<u>Green Trees</u>		<u>Mountain-pine-beetle-killed</u>				
<u>% of total</u>		<u>per Acre</u>		<u>western white pine per acre</u>				
<u>Acres</u>	<u>Area</u>	<u>White</u>	<u>Mixed</u>	<u>Infested</u>	<u>% of</u>	<u>Red</u>	<u>% of</u>	<u>Past</u>
		<u>Pine</u>	<u>Pine</u>	<u>in 1946</u>	<u>Green</u>	<u>Tops</u>	<u>Green</u>	<u>Loss</u>
		<u>Not re-</u>						<u>Not re-</u>
		<u>corded</u>						<u>corded</u>
8.0	1.3			--	--	85	--	

Data for 1947

13.5	2.25	44.2	--	--	--	--	Not re-	Not re-
							corded	corded

Age of western white pine = 40 - 60 yrs.
Average D.B.H. = 12"

From the data secured for the two years it is seen that in spite of considerable loss on the area there is no mountain pine beetle outbreaks present. Other agencies not identified are causing the loss in white pine.

Experiment Station Unit

800 acres

In 1946 the survey sample of this unit amounted to 88 acres. Infested trees found in Canyon Creek were of small diameter and lightly attacked. About $\frac{1}{2}$ mile above the Experiment Station beaver dams have been built which have resulted in the flooding and weakening of some trees by the rising waters. These trees have been the host material in which a small infestation has developed and spread. All infestation in that vicinity was in that flooded area or just above it.

Over the unit as a whole, competition between the small trees within this crowded, logged-over stand seems to have been the major factor creating conditions attractive to the mountain pine beetle. The bark-beetles merely seem to be hastening the thinning needed over much of the area.

The estimate of infestation for 1946 is possibly too low as attacks usually occur subsequent to August 31, the date when the examination was made of this unit.

In addition to the preceding causes of stand depletion there are other factors, so far not identified, which are causing or contributing to the death of western white pine on this unit.

Strips run on the area in 1947 failed to include the vicinity of the beaver ponds and no infested trees were found elsewhere. Data for the unit for the two years follows:

Data for 1946

Survey sample in		Green trees		Mountain-pine-beetle-killed western white pine per acre				
Acres	% of total Area	per Acre		Infested in 1946	% of Green	Red Tops	% of Green	Past Loss
		White Pine	Mixed					
88	11.0	Not re-corded		.17	--	.45	--	Not re-corded

Estimated number of infested trees = 136

Estimated age = 40 - 100 yrs.

Data for 1947

15.5	1.9	11.7	Not re-corded	None	None	Not recorded
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Nickleplate Unit

300 acres

This unit consists of 300 acres of dense, young western white pine (60%) and other species on the north side of Nickelplate Ridge. Terrain is steep, brush dense, and reproduction heavy.

Decidedly overstocked conditions seems to be causing much death in this young stand due to competition. More than half of the red-top trees examined showed no mountain pine beetle work. The presence of dead snags and numerous red-tops indicate considerable loss is occurring, as a result of the thinning process going on in the stand.

The data for 1946 revealed attacks and brood were both light in the infested trees.

Armillaria is one of the factors causing death of some of the white pine but the agency responsible for death of many others was not evident. The succeeding tables give the data obtained for 1946 and 1947.

Data for 1946

Survey sample in		Green Trees		Mountain-pine-beetle-killed western white pine per acre				
Acres	% of total Area	per acre		Infested in 1946	% of Green	Red Tops	% of Green	Past Loss
		White Pine	Mixed					
60	20.0	Not re-corded		.78	--	.9	--	Not recorded

Average D.B.H. = 11"

Estimated age = 80 yrs.

Estimated number of infested trees = 235

Data for 1947

<u>Survey sample in</u> <u>Acres</u>	<u>% of total</u> <u>Area</u>	<u>Green Trees</u> <u>per acre</u>		<u>Infested</u> <u>in 1947</u>	<u>Mountain-pine-beetle-killed</u> <u>western white pine per acre</u>				
		<u>White</u> <u>Pine</u>	<u>Mixed</u>		<u>% of</u> <u>Green</u>	<u>Red</u> <u>Tops</u>	<u>% of</u> <u>Green</u>	<u>Past</u> <u>Loss</u>	<u>% of</u> <u>Green</u>
7.9	2.6	71.0	61.9	.25	.6	1.77	4.2	2.91	13.9

Estimated number of infested trees = 75

From the preceding tables it is seen that the number of infested trees decidedly decreased in 1947. The fairly heavy losses, over 6 percent, which has occurred in the white pine ⁹⁵² is also shown. However, the presence of 71.0 western white pine trees per acre reveals a good stocking of that timber species, if it could be maintained.

Bismark Meadows

200 Acres

This small area supports a heavy stand of young timber of which about 70 percent is western white pine. The stand is apparently of sufficient density to cause competition and thus create conditions favorable to development of a mountain pine beetle infestation. Sufficient infestation is already present to threaten a heavy depletion of the western white pine. The data secured on July 11 is shown in the following tabulation:

Data for 1946

<u>Survey sample in</u> <u>Acres</u>	<u>% of total</u> <u>Area</u>	<u>Green Trees</u> <u>per acre</u>		<u>Infested</u> <u>in 1946</u>	<u>Mountain-pine-beetle-killed</u> <u>western white pine per acre</u>				
		<u>White</u> <u>Pine</u>	<u>Mixed</u>		<u>% of</u> <u>Green</u>	<u>Red</u> <u>Tops</u>	<u>% of</u> <u>Green</u>	<u>Past</u> <u>Loss</u>	<u>% of</u> <u>Green</u>
32	16.0	Not re- corded		.156	--	Not recorded		Not recorded	

Average d.b.h. = 14

Estimated age = 100 yrs.

Estimated number infested trees = 31

Data for 1947

4.5	2.25	6.0	Not re- corded	None	--	Not recorded		Not recorded	
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The preceding data indicates no infestation for 1947. It is believed, however, that this is too conservative an estimate. A few infested trees probably would be found with a larger survey sample but no infestation of any consequence is thought to be present.

Lightning Creek8,400 acres

The white pine in this unit is concentrated in the valley floors and a short distance up the hillside of the various tributaries except for two small patches near the ridges on Steep and Cedar Creeks. Much of the pine is mature and overmature with an average diameter of about 21 inches and 200 years or more old. Stocking is generally light.

Strip run in this unit in 1946 revealed an indicated infestation of .24 of a tree per acre. This estimate was believed too high and has been reduced to about .10 per acre due to a general acquaintance with the area. The data for 1946 and 1947 are given in the following tables:

Data for 1946

<u>Survey sample in</u>		<u>Green Trees</u>		<u>Mountain-pine-beetle-killed</u>				
		<u>per acre</u>		<u>western white pine per acre</u>				
<u>Acres</u>	<u>% of total Area</u>	<u>White Pine</u>	<u>Mixed</u>	<u>Infested in 1946</u>	<u>% of Green</u>	<u>Red Tops</u>	<u>% of Green</u>	<u>Past Loss</u>
96	1.14	Not re-corded		.24 ⁽¹⁾	--	.29	--	Not recorded

(1) Known to be too high estimate lowered to .10 tree per acre.

Data for 1947

75.8	.9	14.5	Not re-corded	None	--	None on strip	Up to 20%
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Age of western white pine = 200 yrs.
Average D.B.H. = 21 inches

From the data for the two years, it is evident that no infestation of any seriousness is present on the unit.

Rapid Lightning Unit1,400 acres

This unit comprises timber in three sections, 28, 32, and 33 at the head of Rapid Lightning Creek which has been cut over selectively, leaving a good stand of timber averaging about 15 inches in diameter breast high. Most of the pine is concentrated in the creek bottoms except for a long northeast exposure in section 32. In the two following tabulations the data for 1946 ^{and 1947} are shown.

Data for 1946

<u>Survey sample in</u>		<u>Green Trees</u>		<u>Mountain-pine-beetle-killed</u>					
		<u>per acre</u>		<u>western white pine per acre</u>					
<u>Acres</u>	<u>% of total Area</u>	<u>White Pine</u>	<u>Mixed</u>	<u>Infested in 1946</u>	<u>% of Green</u>	<u>Red Tons</u>	<u>% of Green</u>	<u>Past Loss</u>	<u>% of Green</u>
30	2.1	not re-corded		.23	--	Not recorded Not recorded			

Average D.B.H. of western white pine = 15"
 " age " " " " = 160

Data for 1947

51.4	3.7	35.6	Not re-corded	.10	.3	.02	.06	Not recorded	
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From the preceding data it is evident that a light infestation is still present on the area. Furthermore, the infested trees were heavily attacked and the brood such that an examination in 1948 would be advisable.

Granite Mountain Unit

7,200 acres

The Granite Mountain Unit showed very little mountain pine beetle infestation. However, the proximity of this unit to the Nickelplate Unit and similarity of stand made it advisable to at least inspect the area again in 1947. The results of the two examinations follow:

Data for 1946

<u>Survey sample in</u>		<u>Green Trees</u>		<u>Mountain-pine-beetle-killed</u>					
		<u>per acre</u>		<u>western white pine per acre</u>					
<u>Acres</u>	<u>% of total Area</u>	<u>White Pine</u>	<u>Mixed</u>	<u>Infested in 1946</u>	<u>% of Green</u>	<u>Red Tons</u>	<u>% of Green</u>	<u>Past Loss</u>	<u>% of Green</u>
19	.3	4.4	38.1	None	None	.05	2.0	1.4	31.4

Average d.b.h. of western white pine = 21
 " age " " " " = 160 yrs.

Data for 1947

Only an extensive examination was made of this unit in 1947 and no alarming condition was observed. Two windfalls on the Granite Mountain - Blacktail Mountain Ridge contained a heavy brood of small larvae but no standing infested trees were observed.

Logs cut along the right-of-way of the road down Tango Creek were more or less infested. A potential local outbreak is present in these logs. If these logs are not salvaged or treated it is quite possible there will be some standing western white pine killed by the beetles.

The preceding units are those on which it was considered advisable to conduct surveys in both 1946 and 1947. A comparison of data and observations for the two years reveals decidedly encouraging conditions.

Areas on which examinations were made in 1946 but which were not examined in 1947 are discussed in subsequent pages.

Upper Priest River Unit

6,400 acres

In the extensive survey made on the Kaniksu Forest in 1945, infestations warranting examination in 1946 were observed on Boundary Creek, the drainage next east of the portion of upper Priest River within the United States. A survey of Boundary Creek could not be made in 1946 but the Upper Priest River unit was examined. The only part of this drainage showing any infestation, other than low endemic, was Malcolm Creek. A group of 11 trees was found on this small drainage but a day of scouting in the area failed to show any more. Over the drainage as a whole, mountain pine beetle activity is extremely light. Data for the area is as follows:

Data for 1946

<u>Survey sample in</u>	<u>% of total</u>	<u>Green Trees</u>		<u>Mountain-pine-beetle-killed</u>				
		<u>per acre</u>		<u>western white pine per acre</u>				
<u>Acres</u>	<u>Area</u>	<u>White</u>	<u>Mixed</u>	<u>Infested</u>	<u>% of</u>	<u>Red</u>	<u>% of</u>	<u>Past</u>
		<u>Pine</u>		<u>in 1946</u>	<u>Green</u>	<u>Tops</u>	<u>Green</u>	<u>Loss</u>
438	6.8	Not recorded		.027	--	.06	--	Not recorded

As the preceding data indicates, no infestation of sufficient intensity to cause alarm was present on the drainage in 1946.

White pine comprises only a small percent of the stand in this unit. The trees are mostly large, over-mature and limited to stream bottoms and a short distance up the mountain sides. Losses in the past few years from the mountain pine beetle have not been heavy.

Hughes Meadows Unit

900 acres

Most of the white pine on this unit is small and from 40 to 80 years old. Overstocked conditions and consequent competition in the stand is hastening

some tree loss due to secondary bark beetles and other organisms invading the weakened trees. Data for the unit is as follows:

<u>Survey sample in</u>		<u>Green Trees</u>		<u>Mountain-pine-beetle-killed</u>				
		<u>per acre</u>		<u>western white pine per acre</u>				
<u>Acres</u>	<u>% of total Area</u>	<u>White Pine</u>	<u>Mixed</u>	<u>Infested in 1946</u>	<u>% of Green</u>	<u>Red Tons</u>	<u>% of Green</u>	<u>Past Loss % of Green</u>
69	7.7	Not recorded		.00	None	.087	--	Light - about 5%

As in many similar young, overcrowded stands, considerable loss is occurring but bark beetles seem to be only the secondary cause of death, and competition within the stand is probably the primary cause.

Forks of Granite Creek Unit

610 acres

This unit includes two areas of young timber, the larger on the South Fork of Granite Creek near its junction with the North Fork and the other at Sema Meadows. Neither showed any evidence of recent or present mountain pine beetle activity in this small diameter (9 inch) young (40 to 60 years old) timber growing on these areas.

Sullivan Creek Unit

10,240 acres

This large drainage includes the following sub-units, Gypsy Meadows, Gypsy Creek, Thor Creek, Cascade Creek, Rainy Creek, Thunder Creek, Markato Creek, Pass Creek, Flume Creek, Dry Canyon, Cato Creek, Coyote Hill, Salino River and Poplar Creek. The stands on all these areas were examined. In general mountain pine beetle activity was negligible or not present at all. Only Pass Creek showed an appreciable infestation but as that area was being logged, no concern need be felt over that condition at present.

Past losses have been extremely heavy on this large unit, to as much as 60% of the former original stand on Stoney Creek and 90 percent at the head of Pass Creek.

Newport Unit

2,960 acres

This unit comprises ten small areas of timber. They are Timber Mountain, Huckleberry Mountain, Parker Lake, Hunger Mountain, North Baldy, Little Calispell, Calispell Lake, Little Round Top, Boyer Mountain, and Kings Lake. These areas should no longer be considered in the mountain pine beetle survey plan. The areas have too small an amount of white pine, have been logged off and little or no white pine is left or else they support only young pine from 10 to 60 years of age.

No evidence of mountain pine beetle activity was noted on any of the areas in the few mature pine that were found.

Boswell Unit

This unit consists of a number of small areas of timber, two of which have been previously discussed in this report, Mosquito Creek and Granite Mountain. The remaining areas were Stone Johnny, Bear Paw, Jasper Mountain, West Branch Road, and three other small areas not named. These unnamed areas will be designated by their location. A brief tabulation supplies the important information connected with these areas.

<u>Area</u>	<u>Acreage</u>	<u>Location</u>	<u>Condition</u>
		<u>Idaho</u>	
Stone Johnny	200	T. 57N R. 6W Sec. 24	No mountain pine beetle activity. Very little white pine.
		<u>Wash.</u>	
Bear Paw	115	T. 33N R. 45E Sec. 32 & 34	Only two red tops observed, no new attacks.
	900	21, 22, 23, 26, 27, 28.	Three red tops noted, no new attacks.
		<u>Idaho</u>	
Trail 178	60	T. 57N R. 5W Sec. 10	Logged off; only reproduction left.
" 177	220 350	10, 11, 15 2, 3	Logged off; no attacks 8 red tops.
		<u>Idaho</u>	
West Branch Road	320	T. 57N R. 5W 4 and 9	Logged off; 19 infested trees noted, all of which had been weakened by logging or brush burning.
Jasper Mt.	100		Logged off; 8 red tops noted but no new attacks.
		<u>Idaho</u>	
Moore's Creek	90 110 150 400	T. 58N R. 5W 34 28 & 29 32	Logged off - no new attacks, 8 red tops. No attacks, no red tops.

North Fork of East River Unit160 acres

This unit consists of two approximately 80 acre patches of timber lying in Sec. 11, T. 59N., R. 3W. One patch of timber is at the head of the North Fork of the East River and the other near the head of Hell Roaring Creek. Terrain is steep with only a little brush and reproduction. The stand consists of white pine, cedar and hemlock, all mature.

No mountain pine beetle infestation was noted on the area and it is unlikely that surveys will be needed for a number of years as the timber is marked for cutting.

Big Meadows Unit1,700 acres

This is a comparatively low, level area supporting islands of logged-over timber in meadow land. Reproduction, brush, and stands of second growth fir, white pine, larch and spruce now occupy the islands. A strip run in parts of sections 26, 27, 34 and 35, T. 59N., R. 5W. revealed an active infestation of the mountain pine beetle in small diameter white pine. No infestation was noted in other parts of this area. The data for the areas is given in the following tabulation.

<u>Survey sample in</u> <u>Acres</u>	<u>% of total</u> <u>Area</u>	<u>Green Trees</u> <u>per acre</u>		<u>Mountain-pine-beetle-killed</u> <u>western white pine per acre</u>					
		<u>White</u> <u>Pine</u>	<u>Mixed</u>	<u>Infested</u> <u>in 1946</u>	<u>% of</u> <u>Green</u>	<u>Red</u> <u>Tops</u>	<u>% of</u> <u>Green</u>	<u>Past</u> <u>Loss</u>	<u>% of</u> <u>Green</u>
35.4	2.1	112	21.4	.23	2.08	.51	4.6	2.03	18.1

Average D.B.H. of western white pine 12

" age " " " " 120

Estimated number of infested western white pine -384

The data given for this unit was obtained early in July. As many more attacks could have occurred from that time until the end of the season the epidemic probably was much more severe than is indicated.

Lamb Creek Unit700 Acres

This unit consists of four small patches of white pine timber type lying in Lamb Creek drainage. Dense brush and reproduction is interspersed with the patches of timber which lie between the creek and the ridge top on the south slopes. The white pine is young (40 to 60 years) and not as yet affected by the mountain pine beetle. However, white pine pole blight is believed to be the cause of death of the many dying trees. Data for the unit is as follows:

Survey sample in		Green Trees		Mountain-pine-beetle-killed western white pine per acre					
Acres	% of total	per acre		Infested in 1946	% of Green	Red Tons	% of Green	Past Loss	% of Green
	Area	White Pine	Mixed						
23.4	3.3	22.8	28.2	None	--	.18	.8	2.4	10.4

Average diameter of western white pine = 11"
 " age " " " " = 40 - 60 yrs.

From the preceding data, it is seen that no infestation warranting control is present in the unit.

Binarch Creek Unit

2,700 acres

Most of this drainage is a narrow canyon on whose steep sides there is a dense stand of young timber including western white pine. In the canyon bottom there are some large, overmature white pine in which there is no infestation in contrast to considerable activity by that insect in the smaller timber on the hillsides. There, the density of the stand is probably causing sufficient competition between trees to promote favorable conditions for the mountain pine beetle.

In the tabulation which follows, the data for the unit as of July 31, is given. Only part of the total infestation for the 1946 season was present on that date.

<u>Survey sample in</u>		<u>Green Trees</u>		<u>Mountain-pine-beetle-killed</u>				
<u>Acres</u>	<u>% of total</u>	<u>White</u>	<u>Pine Mixed</u>	<u>Infested</u>	<u>% of</u>	<u>Red</u>	<u>% of</u>	<u>Past</u>
	<u>Area</u>			<u>in 1946</u>	<u>Green</u>	<u>Tons</u>	<u>Green</u>	<u>Loss</u>
								<u>% of</u>
								<u>Green</u>
50	1.85	Not recorded		.08	--	3.82	--	Not recorded

Average D.B.H. of western white pine = 16"
 " age " " " " = 100 yrs.
 Estimated number of infested trees = 216
 Acreage of area = 2,700 acres

The losses which are occurring in the young timber on this unit may be expected to continue until the dense stand is thinned. If bark beetles are permitted to do the thinning, a decided reduction in western white pine per acre may be expected and the loss of that much timber from trade channels. However, it is understood that a pole sale is contemplated on this unit.

Bismark Mountain

This area of 550 acres supports a heavy stand of young trees of which about 30 percent are western white pine. Factors other than the mountain pine

beetle of which pole blight is believed to be one, are killing some of the young white pine. Data for the unit is as follows:

Data for 1946

Acres of Area	550	Average D.B.H.	16"
Acres of survey sample	12.6	Estimated Age	40 - 80 yrs.
Percent of area covered	2.3	Estimated number of infested trees	- None

Green Trees per Acre		<u>Mountain-Pine-Beetle-Killed White Pine per Acre</u>					
		<u>Attacked 1946</u>		<u>Attacked 1945</u>		<u>Standing WP Snags</u>	
White Pine	Other Species	Num- ber	% of Green W. P.	Num- ber	% of Green W. P.	Num- ber	% of green W. P.
31.7	72.5	--	--	--	--	4.8	15.1

From the preceding data it is seen that there is little if any activity of the mountain pine beetle at present on the area.

Bonnars Ferry Unit

Drainages included in this unit were as follows:

Boulder Creek
Ball Creek
Trout Creek
Placer Creek
Meadow Creek

A total of 202 acres of sample strip was run on the five drainages listed above. No attacks for 1946 and only five red-top trees were seen on these strips. Therefore, these units need not be considered as showing any alarming condition as far as the mountain pine beetle is concerned.

DISCUSSION

A general condition noted on most of the areas where there were young over-crowded stands containing western white pine, was the persistence of mountain pine beetle activity. Apparently this beetle is aiding in the thinning of such stands and in so doing is destroying a valuable part of the stand. With white pine becoming increasingly valuable it is to be regretted that thinnings of such stands cannot be made which would place in trade channels much material that would otherwise be lost. With white pine being decreased in the stand both present and future values are being lowered. Furthermore, failure to thin out these dense stands prevents full utilization of the productiveness of such timbered areas and also lengthens the time necessary to produce trees of a given diameter.